

Conducting Hypothesis Tests

StatsVille Lab 1

Introduction

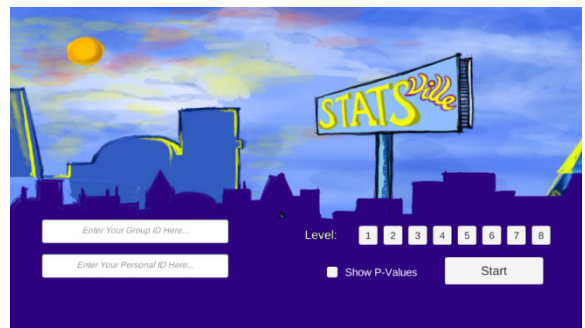
Two potential medicines are currently being tested in the prevention of Statskewsis, **AlignItUp** and **BeHealthy**. Often these are simply referred to as **Treatment A** and **Treatment B**, respectively. Both have shown some evidence of success when compared against a placebo. However, more testing is needed to determine which is most effective. Your task is to determine the best treatment strategy for the StatsVille community.

Playing the StatsVille Game

To play *Epidemic*, go to the following URL: <https://stat2games.sites.grinnell.edu>.

- Click on the **StatsVille** tab.
- Watch the **How to Play StatsVille** video.
- Click **Play StatsVille** (Note: *This site may take a few minutes to load.*)

Input a **Player ID**. This will be on the internet, so you probably *do not want to use a name that will identify you.*



1. Record your Player ID:

Player ID: _____

Your instructor will give you a **Group ID**, which will be identical for every person in the class.

2. Record your Group ID below.

Group ID: _____

Select **Level 1**, check the **Show p-values** button and then click **Start**.

Task #3: Develop a Winning Game Strategy:

Based upon Task #1 and Task #2, develop a strategy to complete the game:

% that should get Treatment A: _____ % that should get Treatment B: _____

Complete the game using the above percentages and record your results below:

Overall result (win/lose): _____ Funds left: _____

Days: _____ Total Patients: _____

Treatment A: _____ total treated
 _____ total cured

Treatment B: _____ total treated
 _____ total cured

After completing the game, can you conclude there is a difference in the effectiveness of the treatments? How confident are you in your conclusions?

Task #4: Play a new game on LEVEL 3:

Play the game again, this time using LEVEL 3. **NOTE that the effectiveness of the treatments are different in this level and will need to be based on new tests.** You may use any strategy you wish each day. Briefly describe your strategy. Make note of which day (if ever) you were confident about which treatment is better on this level, and what your strategy for play was throughout the game.

Record your game results below.

Overall result (win/lose): _____ Funds left: _____

Days: _____ Total Patients: _____

Treatment A: _____ total treated
 _____ total cured

Treatment B: _____ total treated
 _____ total cured

Task #5: Use the data visualization graphs and explore the data:

Explore the data visualizations for this game at <http://shiny.grinnell.edu/StatsVille/>. This app shows all data for Level 1 of this game. *You can also download all the data for the game by using the button at the bottom or by navigating through the <https://stat2games.sites.grinnell.edu> website.* Use the following settings:

- Group ID: **all**
- Player ID: **all**
- X-axis: **Sample Size**
- Y Variable: **Percent Cure A**
- Second Y Variable (Blue): **None**
- Facet by: **None**

When the sample size is small (5 or less), what is the range of values for Percent Cure A?

When the sample size is large (greater than 50), what is the range of values for Percent Cure A?

Check the **Add a model** box. Does the expected value of the **Percent Cure A** change based upon sample size?

Change the **Second Y Variable (Blue)**: from **None** to **Percent Cure B**. Can you see a clear difference in the effectiveness of Treatment A versus Treatment B? Briefly explain the patterns you see with this data.

Change the **Group ID** and **Player ID**, to show only your data. Explain why the expected values of **Percent Cure A** and **Percent Cure B** can be less stable when data from only one game is shown.

In making a decision about which treatment to use, how valuable is a statistical test? What are potential issues with using only statistics in making such a decision? What, if any, other considerations should be used?

Task #6: Remember that you have read the article discussing the ASA's statement on statistical significance and p-values, <https://amstat.tandfonline.com/doi/pdf/10.1080/00031305.2016.1154108?needAccess=true>. You previously selected one of the six principles and wrote one to two paragraphs discussing this principle. Now, apply how that same principle relates to this StatsVille activity. If you selected a principle that you feel did not apply to this lab, then you can select one that does.

To get credit for this assignment, complete the following evaluation:

https://grinnell.co1.qualtrics.com/jfe/form/SV_0qQActiida9MgyV